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(54) **APPARATUS AND METHOD FOR WAVEGUIDE TO MICROSTRIP TRANSITION HAVING A REDUCED SCALE BACKSHORT**

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(58) **Field of Classification Search** 333/26, 333/33

See application file for complete search history.

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(57) **ABSTRACT**

Methods and apparatuses are directed to a transition between a waveguide and a microstrip. One embodiment features an open-ended waveguide having an exposed side at a distal end, a substrate coupled to the open-ended waveguide at a proximate end, a resonator coupled to the substrate, a microstrip line electromagnetically coupled to the resonator, and a backshort coupled to the substrate. Another embodiment features receiving an electromagnetic wave, collecting an incident portion of the received electromagnetic wave, generating first wave having a resonance at a predetermined frequency using the incident portion of the received electromagnetic wave, reflecting a portion of the received electromagnetic wave off of a reduced scale backshort, back towards a collector, generating a second wave having a resonance at a predetermined frequency using the reflected portion of the received electromagnetic wave, and combining the first wave and the second wave in phase.

13 Claims, 17 Drawing Sheets